Names: _____

Designing a Survey

From what you have learned, design a way to determine the proportion of purple squares in the bag, without counting and sorting every single square. You should include descriptions of how we should collect data about the population (all the squares in the bag), how many times you think this procedure should be realisitically repeated, and how to use that data to calculate the N-value.

Names: _____

Capture-Recapture Method

Given a population of unknown size, how can you estimate its N-value? In the previous example, we used sampling to estimate what proportion of the population has a certain characteristic. That is, we drew samples to see what percentage of the paper squares were purple. This time, we will draw a sample, and **give that sample** a certain characteristic (by tagging or marking each member of the sample), and then see what proportion with that characteristic shows up in our second sample.

1. Determine a sample size for the first sample that you are going to choose. Why did you pick that size sample? Does it seem big enough? Too big? Remember that you want a sample big enough to provide some meaningful information, but small enough that you can still carry out the tagging procedure easily.

   Size of first sample: _____

2. Pick out the sample from your population (this is the process of **capturing**). Tag every member of your sampling frame.

3. Let your sample rejoin the main population and mix randomly with the others.

4. Choose a second sample (the **recapture**). Does it have to be the same size as the original sample? Why or why not? (Think about why you are picking the second sample. What information are you trying to learn from the recapture?)

   Size of second sample: _____

5. What is the most important information that the second sample gives you? Can you use this information and the information you recorded above to approximate the size of your population?